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NORTH AMERICAN AIR DEFENSE COMMAND

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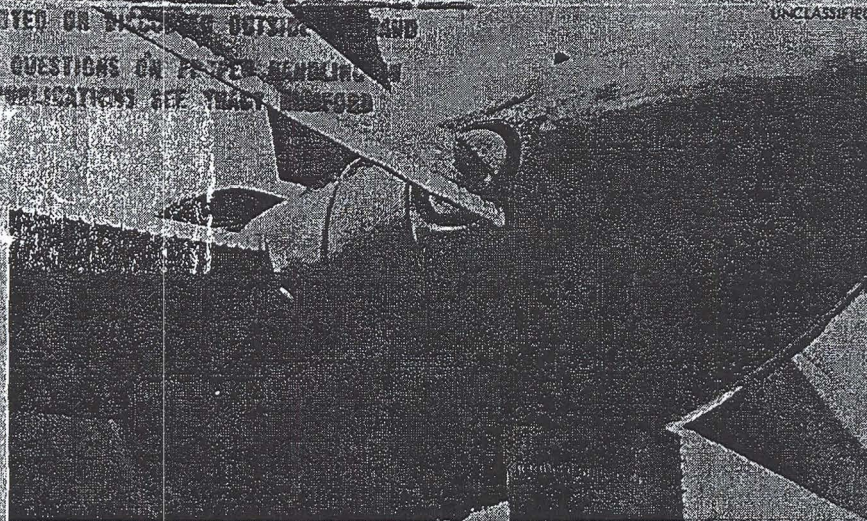
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The WIR in Brief

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Space

SOVIET WEATHER SATELLITES MAY BE UNDER CONSIDERATION

Another "first" could be achieved with stabilized 5-ton Vostok-type capsule carrying optical and thermal radiation detectors.

NEW SOVIET SPACE OPERATION IN PROSPECT

Vessels which deployed to Gulf of Guinea for Vostok II operation have been at Gibraltar for month.

COVER: Propellers of CEEAT/TU-114 transport. (UNCLASSIFIED)
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space

significant
intelligence
on space
developments
and trends

SOVIET WEATHER SATELLITES MAY BE UNDER CONSIDERATION

The Soviet press and radio are beginning to reflect Soviet interest in the use of earth satellite vehicles for weather observation. The most authoritative pronouncements on the subject have been these:

- Feofan F. Davitaya, Deputy Chief of the Hydrometeorological Service, has said that the possibility of using "spaceships" as weather satellites is being studied and that plans are already afoot for determining the distribution of precipitation and thunderstorm areas by means of radar installed on "spaceships." (The Soviets apply the term "spaceship" to the 5-ton vehicle of Sputniks IV, V, VI, IX, X, XI, and XII.) He also said that TV cameras could be used for daylight observations and thermometers for night operations, and that cloud patterns and radiation balance could be measured from "spaceships."
- Major General G. I. Pokrovskiy, a member of the Interagency Commission for Interplanetary Communications, has discussed the use of meteorological satellites in polar orbits forming a satellite ring. His description indicated a possible intention to use an advanced system with auxiliary propulsion devices for making orbital changes and for station keeping (maintaining space intervals between satellites and keeping desired orbital altitude by overcoming decay-causing resistance). (However, Prokovskiy has also said that study of the upper layers of the atmosphere is being linked with manned space flights -- a suggestion that weather surveillance equipment will be incorporated in manned space vehicles, leaving the more advanced multivehicle system for a later date.)

Davitaya is the first responsible Soviet official known to have said that studies and plans are under way (presumably in the U. S. S. R.) for a meteorological satellite. His agency controls the Central Aerological Institute, which made the Soviet meteorological rocket studies, so Davitaya would

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probably be aware of any plans for a meteorological satellite.

The Soviets' know-how for building photographic and electronic equipment suitable for such a satellite is evident in their photographs of the earth taken from vertically fired rockets and photographs of the hidden side of the moon taken by Lunik III, plus television monitoring of human and canine passengers in their "spaceships."

Davitaya's reference to "radar" on "spaceships" for determining the distribution of precipitation and thunderstorms may refer to passive rather than active radar. Passive equipment (possibly operating in the submillimeter region -- above 300,000 mc/s) would note clouds and precipitation by detecting the reduction in radiowave emission from the earth caused by cloud and precipitation absorption. (Soviet know-how in submillimeter work is believed to be good.) If the Soviets plan to measure echoes from cloud cover with active radar, they have sets which could be modified for this purpose; however, the power requirements would be great enough to incur weight problems.

The Soviets, in any event, will know how to choose the optimum frequency for radar-type weather reconnaissance from space, and they will be able to design good data-relay systems. Their theoretical research in radiowave propagation plus experience gained in radioing data and pictures to earth will stand them in good stead. Further, the Soviet "spaceship" is large enough to carry the equipment involved.

The Soviets presumably would not like to undertake a space venture that would give the world the impression that they were duplicating prior U. S. meteorological satellites. To avoid this impression, they could achieve a propaganda "first" and still have their meteorological satellites by launching a stabilized 5-ton vehicle carrying optical and thermal radiation detectors, as well as radar for determining cloud distribution at night. The first U. S. weather satellites (Tiros I and Tiros II) carried only optical and infrared devices, and they were not stabilized to point earthward continuously. (Nimbus, follow-on to Tiros, is to carry TV cameras and passive radiation sensors, and will be stabilized. Later Nimbus vehicles may carry active radar for observing precipitation, a spectrometer for measuring temperature, and an image orthicon camera -- an infrared TV system.)

The development of radiation-sensing devices for weather observation can be expected to contribute greatly to the development of sensing systems for military reconnaissance.

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NEW SOVIET SPACE OPERATION IN PROSPECT

The Soviets may be planning another space operation for the not-too-distant future. This is suggested by a recent Soviet broadcast and by apparent preparations of certain Soviet vessels to participate in such an operation.



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A Soviet broadcast of about 3 weeks ago intimated that a major space operation much more spectacular than any of the previous ones was in preparation. The forthcoming event, the announcer said, will require the deployment of Soviet instrumentation vessels in the mid-Pacific as well as in the northwestern Atlantic.

The 4 SIBIR'-Class ICBM-range instrumentation vessels, which took up stations in the Pacific during the space flights of Majors Gagarin and Titov, are again in the Pacific and are at present monitoring the current firings of Soviet ICBMs to the 6500-n. m. impact area.

Three Soviet merchantmen -- Dolinsk, Krasnodar, and Voroshilov -- also may be getting ready for an operation. These vessels were deployed in the Gulf of Guinea (off the coast of Africa) during both Vostok operations. Following the flight of Vostok I, these ships assembled and returned to their ports in the Black Sea. However, they did not return to home port immediately after the firing and recovery of Vostok II (6 and 7 August). Instead, they assembled and headed for Gibraltar, where they arrived in late August. As of 25 September all 3 ships were still at Gibraltar. Their long stay there suggests that the vessels will take on fuel, food, and other supplies and then return to sea for another space operation.

The nature of the forthcoming operation cannot be foreseen at this time. It almost certainly will not involve Venus or Mars, since these planets will not be in a favorable position until August and November, respectively, of 1962. The moon, on the other hand, is in a favorable position several days each month for various types of shots. Among the possibilities are the soft landing of an instrumented package on the moon or a circumlunar shot.

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